

# Surround-550<sup>THX</sup> surround speaker

## operation manual



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## 1. INTRODUCTION

Congratulations! Your new M&K Surround-550 speaker system will give you years of unmatched enjoyment and excitement while listening to your favorite multichannel musical and audio/video sources, whether they are Dolby Digital, MLP, DTS, Pro-Logic, or enhanced stereo modes.

We encourage you to read this owner's manual, as there is a great deal of information provided here to help you get the best possible performance.

If you have any questions about your speaker system, please contact your M&K dealer or call the M&K factory directly at (310) 204-2854, from 8:30 AM to 5:00 PM Pacific Time, Monday through Friday. We will be happy to help you with any question, no matter how simple or complex it may be.

## 2. THE HOME THX AUDIO SPEAKER SYSTEM

Your choice of an M&K Home THX Audio speaker system assures you of achieving the state of the art in home theatre music and video reproduction. The precise and exacting standards developed by Lucasfilm's Home THX division assure that you will hear every element of film sound — from the softest brush of an object against an actor's clothing to the awesome impact of effects such as an exploding planet — with the same sonic quality heard by the film's director and sound designer as they created the final mix of sound on the studio's dubbing stage.

To do this in a home environment requires different equipment and standards than are found in a THX motion picture theatre. The standards developed for Home THX Audio are critically important to achieving the following performance attributes:

- wide frequency range, extending to the limits of audibility
- smooth, naturally balanced overall sound
- excellent dialog intelligibility
- wide dynamic range with extremely low distortion
- well-matched timbre (tonal balance) between front speakers and surrounds
- precise localization of specific sounds (as in special effects)
- envelopment by ambient soundfield (without any localization of individual speakers to distract from the action on-screen)
- superb performance with musical sources

The unsurpassed quality of your M&K Home THX Audio speaker system means that all of the excitement and emotional involvement of films and music will be brought to life in your home. Turn down the lights, and let the experience begin!

## 3. INSTALLATION OF YOUR SURROUND-550 SPEAKERS

Your M&K Surround-550s can be installed in a variety of ways. Choosing the correct location, however, is extremely critical. **READ SECTION 6 (page 6) BEFORE DECIDING WHERE TO INSTALL YOUR SURROUND-550s.**

They can be placed on tall stands (such as the M&K ST series, which are available from your M&K dealer or from M&K); they can go on shelves or bookcases; or more permanently mounted using brackets or a ceiling suspension system. To make their installation as easy as possible, we have provided integral flush-mount brackets that allow you to install the Surround-550 quickly and securely.

### FLUSH-MOUNT WALL HANGER BRACKETS

Your Surround-550 speakers come with a flush-mount wall bracket that can be attached to each cabinet. There are pilot holes for mounting the brackets on the back baffle of the speaker. Also included are the matching brackets that attach directly to the wall, as well as all necessary mounting screws and drywall inserts.

In order to use these brackets, see the enclosed template and follow these instructions.

Attach the brackets to the speaker using the enclosed 3/4" wood screws. You will have to remove the 3/8" bolt installed in the back of the speaker. Use the pilot holes at the top center of the back baffle of the cabinet. Either of



the matching brackets can be attached to the speaker. The bracket that attaches to the speaker must point down, and the bracket that attaches to the wall must point up. In both cases, the face with the printing must face out.

Then determine where you will locate your Surround-550s. See Section 5 below for guidelines on where to locate the speakers. Then, using the template sheet enclosed (which is reproduced on the next page), mark holes on the wall where the brackets will be permanently mounted. Ideally, one set of these holes should go into a wall stud, to give you the greatest strength. First, locate the center of the stud.

Tape the four corners of the template sheet to the wall in the location you have selected, using a carpenter's level to make sure the line marked "LEVEL TEMPLATE TO THIS LINE" is level. The template sheet has locations marked for the two mounting holes needed to attach the wall bracket to the wall.

Once you are absolutely certain that you have the correct location, you are ready to drill the pilot holes. Go ahead and drill right through the paper template into the wall. Re-check your measurements (especially making sure the holes will be level) at least once before drilling.

**WARNING: IT IS POSSIBLE THAT ELECTRICAL WIRING MAY BE LOCATED BEHIND THE WALL IN THE LOCATION THAT YOU HAVE SELECTED. BE EXTREMELY CAREFUL ANY TIME YOU DRILL INTO A WALL.**

If you are mounting the bracket to a wall stud, drill two 3/32" holes per bracket. Remember that the wallboard material is 1/2" or 5/8" inches thick, and you will drill through this before meeting the stud. If you are mounting the bracket to drywall with the plastic anchors, drill two 1/4" pilot holes per bracket. Once all holes have been drilled, remove the template from the wall. Press the plastic wall anchors into the 1/4" pilot holes until they are flush with the wall. Tap them gently into place if necessary.

Once the holes are drilled, place one bracket against the wall, making sure that the "tongue" (the portion that will engage the bracket on the speaker cabinet) is facing away from the wall and pointing up. Using the two #6 - 1 3/4" wood screws provided, fasten this bracket to the wall. **BE VERY CAREFUL. DO NOT FORCE THE PLASTIC ANCHORS THROUGH THE WALL OR OVERTIGHTEN THE SCREWS.** Install the second bracket in the same fashion.

That's it! All that is left for you to do is attach the speaker wire to the input terminals (Section 5, below), and, from the top, gently slide the speaker into place against the wall. Do the same for the other channel.

## 4. THE M&K HIGH-FREQUENCY PRISM SYSTEM

Your Surround-550 speakers utilize M&K's exclusive High-Frequency Prism System to optimize imaging and coverage of sound throughout the listening area. This system is designed to take into account the effect of the curved mesh metal grilles on your speakers. Therefore, your Surround-550s are designed for the best sound when the grilles are in place. We recommend that you leave the grilles on the speakers for all listening.

You will note that the tweeter in your Surround-550s speakers is mounted at a slight angle (4.7 degrees). This mounting is an integral part of the High-Frequency Prism System.

When the speakers are mounted properly, the tweeter will be angled **away** from the listening position. That means that the surround channel speakers should be mounted with the tweeter angled towards the back wall of the room (when the speakers are mounted on the side walls), and with the tweeter angled toward the closest side wall (when the speakers are mounted on the back wall of the room).

When the speaker is mounted in this fashion, its stereo imaging and coverage of sound are optimized for a very wide listening window that extends from the on-axis position towards the center of the room. If the speaker is mounted with the tweeter pointed in the other direction, its sound quality will be adversely affected.

## 5. SURROUND-550 SPEAKER HOOK-UP

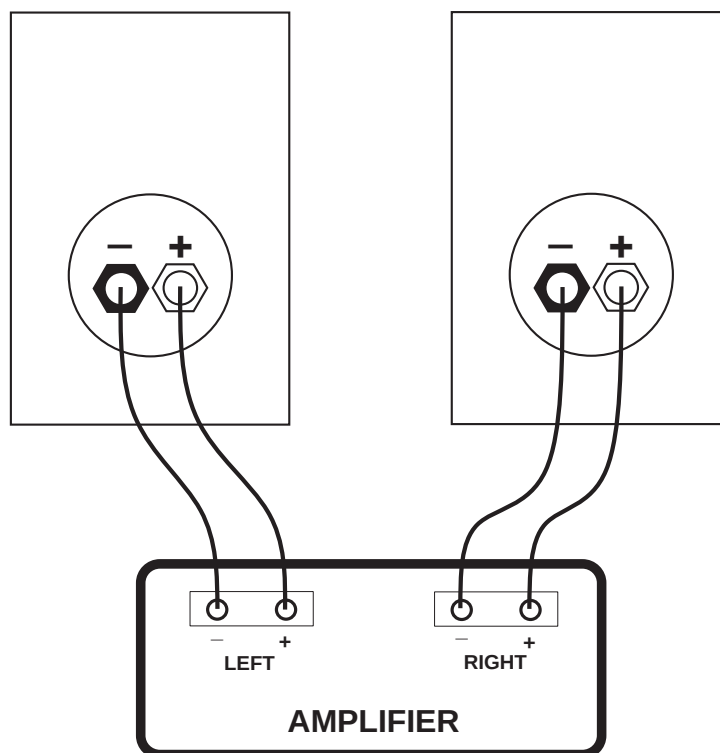
### LEFT CHANNEL SPEAKER / RIGHT CHANNEL SPEAKER

Your Surround-550s come in two versions - a Left Channel speaker and a Right Channel speaker. It is critical that the correct speaker be used in each channel.

On the back panel of the speaker, there is an arrow with the printed nomenclature "Point Arrow Towards Screen." To correctly install the Surround-550s, be sure that the arrow printed on each speaker is pointed towards the television screen. The arrows will not be visible once the speaker is installed.

To confirm that the speakers are correctly installed right and left, check the angle of the tweeter (see Section

**FIGURE 1**  
**WIRING WITH THE SURROUND-550**



4 above). The tweeter for each speaker should be pointing towards the back wall (or the nearest side wall).

#### **WIRING THE SURROUND-550**

The Positive ( + ) lead from your amplifier or receiver should be connected to the RED ( + ) "INPUT" terminal, and the Negative ( — ) lead from your amplifier or receiver should be connected to the BLACK ( — ) "INPUT" terminal. See Figure 1 above.

#### **SPEAKER WIRE**

The sound quality that you get from your Surround-550s can be affected by the type of speaker wire that you use to connect them. While it is possible to use speaker wire as thin as 22 gauge to hook your Surround-550s up, wire of less than 16 gauge will compromise their sound quality. For wire runs of up to 10 feet, 16 gauge wire is acceptable. For runs up to 20 feet, you should use a minimum of 14 gauge. For up to 30 feet, use a minimum of 12 gauge, and over 30 feet should use 10 gauge. See the THX Installation and Operation Manual for more information.

There are a wide variety of premium speaker cables available from a number of specialist manufacturers. We do not endorse any specific brand of premium cable, but we do recommend the highest quality cable that fits your budget. Beware, though -- with cables, expensive is not always better. If you have any questions, contact your M&K Home THX dealer for advice.



## 6. PLACEMENT OF THE SURROUND-550s AS SURROUND CHANNEL SPEAKERS IN A HOME THX AUDIO SYSTEM

Your Surround-550 speakers are specifically designed to be used as surround channel speakers in a multichannel audio system (either Home THX or non-THX). The instructions given here apply to surround channel applications, including Dolby Digital, MLP, DTS, and multichannel music modes such as ambience recovery or acoustical environment synthesis.

Your surround speakers can be installed in a wide variety of locations, but in some rooms their installation can be quite a challenge to install. If you have questions, please don't hesitate to contact your M&K dealer or the M&K factory. We will be happy to discuss your system with you.

In general, the Surround-550s should be located high on the walls and to the sides of the listening position. Typically, they should be placed on the left and right room side walls at the center of the main listening area.

### a. POSITION RELATIVE TO SEATING

The Surround-550 speakers should be located adjacent to the seating position. If there is one row of seats, the Surround-550s should be located directly to the left and to the right of this row of seats. If there are multiple rows of seats, then the Surround-550s should be located directly to the left and right of the geometric center of the listening area.

If the Surround-550s cannot be located exactly adjacent to the seating area, it is better for them to be located slightly towards the back of the room, behind the listening positions, rather than in the front of the room, between the listening position and the screen.

It is also acceptable to locate the speakers on the back wall of the room. In this case, they should be located symmetrically relative to the back corners. Another good location is in the corner itself. In addition to the flush mount brackets provided with your speakers, M&K makes a variety of very high quality speaker mounting brackets that can be used to mount the speakers to the side or back walls, as well as in the corner itself.

### b. HEIGHT

In general, the Surround-550 should be located near the ceiling. Placement above the listeners' heads is very important, with the cabinet's bottom at least two feet above a seated listener's head. In fact, if at all possible, the speakers should be located above a standing listener's head, so that people walking around the room will be unable to localize them.

### c. WALL LOCATION

Your surround speakers can be mounted on either the side walls or on the back wall, or even directly in a corner. They can be flush on the wall, on shelves, on brackets, etc. If you find the sound to be too directional, you can angle the speakers towards the back wall or towards the side wall surface closest to the speaker. If you are angling the speaker for this purpose, it should be angled in the same direction that the tweeter is angled (towards the back of the room if the speaker is mounted on the side wall, and towards the nearest corner if the speaker is mounted on the back wall).

### d. USING MULTIPLE PAIRS OF SURROUNDS

Some listeners prefer multiple pairs of surround speakers. Multiple pairs of surrounds can make a dramatic improvement and provide a deeper and broader surround effect. When using multiple pairs of surround speakers, a symmetrical installation pattern works best. For example, one pair could be mounted on the back wall of the room, mounted equidistant from the back corners, with the other pair mounted on the side walls of the room, equidistant from the same back corners.

## 7. SPEAKER PHASING TEST

In any system using a subwoofer separate from Satellite speakers, especially in multichannel surround sound applications, a phasing test must be performed to insure proper phase in the system, thereby achieving optimum sound in the critical bass frequencies.

For a Home THX Audio system, follow the system instructions provided with the THX controller, as you will need to have correct phase among all the speakers in the system. These instructions will take you through the front channels, surround channels, and subwoofer, by comparing phase between individual channels until you have established that all units have identical phase.



## 8. SPEAKER DAMAGE & HOW TO AVOID IT

An important factor to consider with any loudspeaker system is the potential for speaker damage. Even though your Surround-550s have extremely high power handling ability, they still can be damaged by relatively low powered amplifiers.

While very few M&K Satellites are actually returned for service, the vast majority of those returned are not for manufacturing defects. Instead, they are returned because they have been overdriven, almost always because the amplifier or receiver used was driven into clipping distortion. This damage is considered abuse, and is not necessarily covered under warranty.

This clipping distortion occurs when the demands of the music are greater than the amplifier's available power. It can occur at 20 watts with a small amplifier, or at 400 watts with a large amplifier. Regardless, when this happens, the amplifier's output waveform (which usually looks like a smooth arc) is "clipped" off, exhibiting a flat top instead of the arc.

This flat top contains multiples of the original amplified frequencies, sometimes at higher levels than the original signal itself. For tweeters, this can be very damaging, as this distortion is well above the audible range, where you will be unable to hear it, and where the tweeter is more vulnerable to damage.

When an amplifier clips, its sound becomes harsh and grating, and a break-up is often audible in the bass frequencies. It will become uncomfortable to listen to, compared to a slightly lower volume level. When you are listening at high volume levels, be aware of the onset of clipping distortion, and turn the volume down slightly if the sound takes on the character described above.

When tone controls or equalizers are used to boost frequencies, the problem occurs much more rapidly. Even a small boost of low or high frequencies can easily double the power requirement and lead to amplifier clipping at moderate levels. Therefore, you should use your tone controls judiciously, avoiding extreme boosts of the bass and treble controls, especially when you are listening at high volume levels.

The best way to avoid speaker damage is to use common sense. Use moderate boosts of tone controls or equalizers, at the very most. Listen carefully for any harshness and break-up, especially at high volume levels, and turn down the volume when needed. If you cannot get enough volume, you may need to consider a higher-powered amplifier. If you have any questions about this, please contact M&K, and we will be happy to discuss it with you further.

## 9. IF YOU NEED SERVICE

Contact your dealer or M&K with a complete description of the problem. Please have the unit's model and serial numbers (found on the back of the cabinet), date of purchase, and your dealer's name. You can call M&K between 8:30 AM and 5:00 PM Pacific Time, Monday through Friday, at (310) 204-2854. If you call outside these hours, leave a message, and we will return your call.

### **DO NOT RETURN YOUR SPEAKERS TO THE FACTORY FOR SERVICE WITHOUT OBTAINING PRIOR AUTHORIZATION.**

All M&K speakers (except for subwoofers) carry a five year limited parts and labor warranty. This warranty is transferable to new owners. It does not cover abuse, misuse, repairs by unauthorized service stations, speakers without serial numbers, and those damaged in shipping or by accident. If you have any questions about the warranty, please contact M&K.



## 10. SPECIFICATIONS

|                     |                               |
|---------------------|-------------------------------|
| IMPEDANCE:          | 8 ohms                        |
| MINIMUM POWER:      | 25 watts RMS                  |
| RECOMMENDED POWER:  | 50 watts RMS to 200 watts RMS |
| MAXIMUM POWER:      | 200 watts RMS unclipped peaks |
| FREQUENCY RESPONSE: | 80 - 20 KHz ( $\pm$ 3dB)      |

## 11. CABINET MAINTENANCE

Treat the cabinet as you would any piece of fine furniture. Its black vinyl finish does not require any special maintenance; regular dusting with a lint-free cloth and periodic cleaning is all that is required. Do not use any solvent based cleaners, as they may damage the cabinet surface.